



## Vacuum Components

### Vacuum End Effectors VEE

# Vacuum End Effectors VEE

## Application



Vacuum end effector with vacuum module and bellows suction pads SPB4f handling flexible bags



Vacuum end effector with bellows suction pads SPB4f handling pouches with many wrinkles and a low filling degree.



Vacuum end effector with bellows suction pads SPB4 and stabilization elements handling unstable flow-wrap packaging

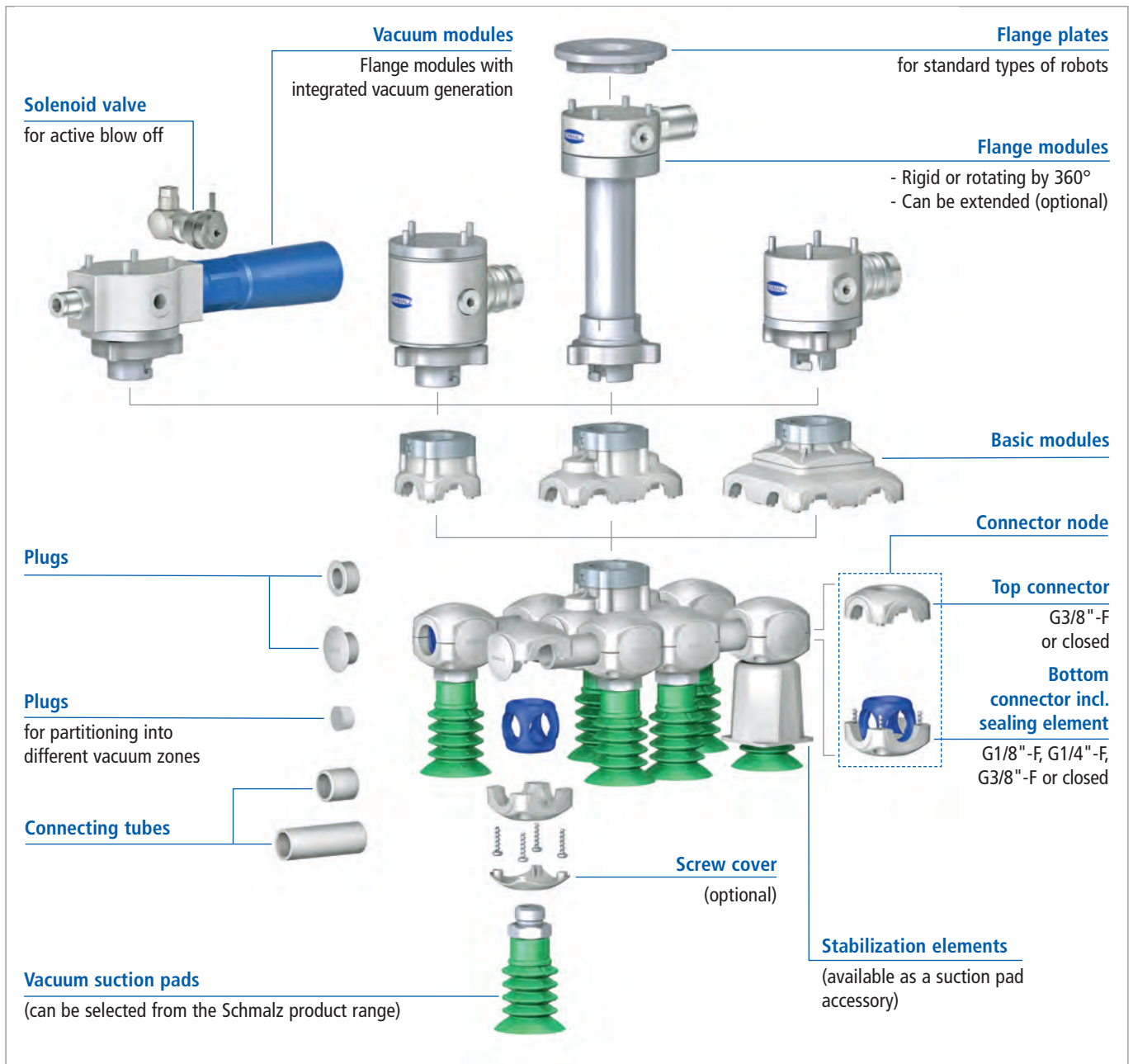
### System components for quick and cost-effective designing of vacuum end effectors for high-speed packaging processes

- Pick-and-place applications with Delta, SCARA and articulated robots
- Fully automated filling of cardboard boxes in case packers
- Primarily used in secondary packaging processes
- Transporting products into top-loading machines as well as in cardboard box and tray aligners
- Use in flexible packaging machines with frequent format changes



Vacuum end effector with flat suction pads SPF handling boxes of tea

# Design and Sample Configuration



## Vacuum Suction Pads for the Packaging Industry



### Flat suction pads SPF / Bellows suction pads SP(O)B1

For intrinsically stable and slightly unstable cardboard boxes and packaging

[www.schmalz.com/spf.../spb1.../spob1](http://www.schmalz.com/spf.../spb1.../spob1)



### Bellows suction pads SPB4(-F)

For bags and flexible packaging

[www.schmalz.com/spb4.../spb4-f](http://www.schmalz.com/spb4.../spb4-f)



### Flat suction pads SGPN

For films, blister packs and other sensitive packaging

[www.schmalz.com/sgpn](http://www.schmalz.com/sgpn)



### Bellows suction pads FSG / FSGA

Universal suction pads for various packaging applications

[www.schmalz.com/fsg.../fsga](http://www.schmalz.com/fsg.../fsga)

# Overview of VEE System



## Flange plates FLAN-PL

Quick and easy connection of the flange module to the robot; available for connectional robot types and as an universal flange.

[www.schmalz.com/flan-pl](http://www.schmalz.com/flan-pl)



## Flange modules VEE-QCM

Quick-change adapters and vacuum connection; either horizontal or vertical (max. flow rate 60 m<sup>3</sup>/h). Rotary unit VEE-RU for continuous rotation of the end effector without decreasing the flow or winding up the hose available as an alternative.

[www.schmalz.com/vee-qcm.../vee-ru](http://www.schmalz.com/vee-qcm.../vee-ru)



## Vacuum modules VEE-QCMV

Quick-change adapters with space-saving integrated, energy-efficient vacuum generation using the Schmalz ecoPump (max. suction rate: 10.5 m<sup>3</sup>/h); with silencer or holder cap.

[www.schmalz.com/vee-qcmv](http://www.schmalz.com/vee-qcmv)



## Solenoid valve EMV for active blow off

Minimal cycle times with active blow off through a controlled compressed air pulse; available as an accessory for vacuum module VEE-QCMV.

[www.schmalz.com/emv](http://www.schmalz.com/emv)



## Flange extensions VEE-FE

Option for flange modules for dipping into cardboard boxes or trays; available in three lengths. Can be swapped quickly thanks to the bayonet mount.

[www.schmalz.com/vee-fe](http://www.schmalz.com/vee-fe)



## Basic modules VEE-QCF

Tool-free connection of the end effector to the flange module and central vacuum feed; available as a 1-, 2-, or 4-connection module.

[www.schmalz.com/vee-qcf](http://www.schmalz.com/vee-qcf)



## Top connector VEE-CO-U

Top half-shell for assembly of connection nodes; available in closed design or with connection for additional vacuum feed (G3/8"-F).

[www.schmalz.com/vee-co-u](http://www.schmalz.com/vee-co-u)



## Bottom connector VEE-CO-L

Bottom half-shell including sealing element and screws for assembly of connecting nodes; either closed or with connection for suction pad (G1/8"-F, G1/4"-F, G3/8"-F); optional screw cover available.

[www.schmalz.com/vee-co-l](http://www.schmalz.com/vee-co-l)



## Connection tubes VEE-TU

Vacuum guide and variable connection of nodes; available in 18 mm and 200 mm lengths. Pipe scissors for quick and safe cutting available as accessory.

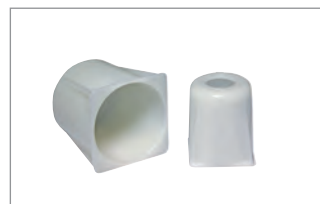
[www.schmalz.com/vee-tu](http://www.schmalz.com/vee-tu)



## Plugs VEE-PL

For sealing unused connections on connector nodes, vacuum feed on the side and partitioning into different vacuum zones.

[www.schmalz.com/vee-pl](http://www.schmalz.com/vee-pl)



## Stabilization elements SPSE

Increases process speed by supporting the workpiece; available as an accessory for bellows suction pads.

[www.schmalz.com/spse](http://www.schmalz.com/spse)



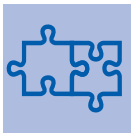
## Tool center point VEE-TCP

For determining the robot tool position with a center point that can be flange mounted directly; suitable for the quick-change interfaces of the flange modules or vacuum modules.

[www.schmalz.com/vee-tcp](http://www.schmalz.com/vee-tcp)

# Vacuum End Effectors VEE

## Overview of Highlights



### Individual configuration

- Flexibly configurable, perfectly coordinated individual components
- Variable number and positioning of the suction pads
- Hose-free vacuum distribution
- Optional integrated vacuum generation available



### Reduced construction and manufacturing efforts

- Online configurator for designing the end effector in just a few minutes including the creation of CAD data and parts lists
- Minimizes configuration and production time by more than 80 %
- Reduces manufacturing costs



### Extremely lightweight

- Complete end effectors weighing as low as 150 g
- Designed for high-speed applications with accelerations up to 10 g (100 m/s<sup>2</sup>)



### Outstanding hygiene properties

- FDA compliant material (high performance thermoplastic)
- Excellent resistance to alkaline agents



### Assembly service

- Upon request, we can deliver your custom-configured vacuum end effector VEE as a complete unit

## Configuring Rather Than Designing

### VEE online configurator

With the VEE online configurator, you arrive at an individually tailored end effector solution with just a few mouse clicks.

#### Your benefits

- Live 3D preview of the configuration
- Creation of a 3D PDF data sheet including a parts list and CAD data
- Simple importing in your existing construction
- Quick request for proposal (RFP)

[www.schmalz.com/vee](http://www.schmalz.com/vee)



- 1 Enter workpiece data
- 2 Select the gripper layout
- 3 Select the vacuum suction pads
- 4 Define the suction pad positions
- 5 Select a connection
- 6 Generate 3D data – That's all!

# Vacuum End Effectors VEE

## Starter Set



Whether for use directly in a robotic system or as handy design tool – with the VEE Starter Set you have all of the most important components for quickly assembling your effector right at your fingertips.

### Contents

120-piece starter set with all of the components necessary for installing up to two VEE vacuum end effectors, including:

- 8 vacuum suction pads SPB4-30 for bags and flexible packaging
  - Lockable quick-change adapter with bayonet mount
- Supplied in a sturdy plastic case with detailed assembly instructions

Part no.: 10.01.36.00030



VEE Starter Set

[www.schmalz.com/vee-starterset](http://www.schmalz.com/vee-starterset)

## Technical Data and Design Data

### Technical Data

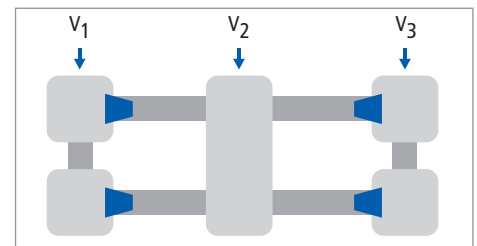
Specification	Vacuum end effectors from the VEE system
Max. rated flow	60 m <sup>3</sup> /h
Max. vacuum value	-980 mbar
Overpressure resistance	up to 3 bar
Temperature range	-25 °C to +80 °C
Material	High performance thermoplastic (compliant with FDA guidelines)
Max. load capacity	2,000 g

### Design Data

Vacuum end effectors VEE can be freely configured within the framework values. When used in connection with our wide selection of suction pads, the possibilities are practically endless.

Specifications	Vacuum end effectors from the VEE system	
	Minimum configuration	Maximum configuration
Basic module	1-connection	4-connection
Suction pads connection thread	G1/8" -F, G1/4" -F, G3/8" -F	G1/8" -F, G1/4" -F, G3/8" -F
Gripper size (L/W)	38 x 38 mm	300 x 200 mm
Weight <sup>1</sup>	65 g	500 g
Qty. of suction pads	1	12
Workpiece sizes (L/W)	15 x 15 mm	400 x 300 mm

<sup>1</sup> without flange module and suction pad



Partitioning into multiple independent vacuum zones with plugs VEE-PL

Scan code to access the digital brochure



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